

CLAIMS

I Claim:

1. A switch system comprising:
a radio frequency switch element configured to receive a radio frequency (RF) input signal;
a first voltage supply terminal configured to receive a first DC supply voltage;
a boost circuit configured to receive the RF input signal and the first DC supply voltage and in response, provide a bias voltage for controlling the switch element.

2. The switch system of Claim 1, wherein the boost circuit comprises:

a first capacitor having a first terminal coupled to receive the RF input signal; and
a rectifier circuit coupled to a second terminal of the capacitor and the first voltage supply terminal, wherein the rectifier circuit is configured to provide the bias voltage in response to the RF input signal and the first DC supply voltage.

3. The switch system of Claim 2, wherein the rectifier circuit comprises a first diode and a first resistor coupled in series between the first voltage supply terminal and the second terminal of the first capacitor.

4. The switch system of Claim 3, wherein the rectifier circuit further comprises a second diode and a second resistor coupled in series between the second terminal of the first capacitor and the switch element.

5. The switch system of Claim 4, further comprising a second capacitor coupled between the first voltage supply terminal and the switch element.

6. The switch system of Claim 5, wherein the second capacitor and the series-connected second diode and second resistor are coupled at a first node, and further comprising a third resistor coupled between the first node and the switch element.

7. The switch system of Claim 4, further comprising a second capacitor coupled between a second voltage supply terminal and the switch element.

8. The switch system of Claim 7, wherein the second capacitor and the series-connected second diode and second resistor are coupled at a first node, and further comprising a third resistor coupled between the first node and the switch element.

9. The switch system of Claim 4, further comprising a second capacitor and a third resistor connected in parallel between the second diode and the switch element.

10. The switch system of Claim 4, further comprising a third resistor coupled in series with the second resistor and the second diode.

11. The switch system of Claim 3, wherein a cathode of the first diode element is coupled to the second terminal of the first capacitor.

12. The switch system of Claim 3, wherein an anode of the first diode element is coupled to the second terminal of the first capacitor.

13. The switch system of Claim 4, wherein a cathode of the first diode element and an anode of the second diode element are coupled to the second terminal of the first capacitor.

14. The switch system of Claim 3, wherein an anode of the first diode element and a cathode of the second diode element are coupled to the second terminal of the first capacitor.

15. The switch system of Claim 1, wherein the first supply voltage is ground.

16. A method of controlling a radio frequency (RF) switch comprising:

applying an RF input signal to the RF switch and a boost circuit;

applying a first DC supply voltage to the boost circuit;

generating a bias voltage in response to the first DC supply voltage and the RF input signal; and

controlling the switch element with the bias voltage.

17. The method of Claim 16, wherein the step of generating the bias voltage comprises charging and discharging a first capacitor in response to the first DC supply voltage and the RF input signal.

18. The method of Claim 17, wherein the step of generating the bias voltage further comprises charging and discharging a second capacitor in response to the first DC supply voltage and the RF input signal.

19. The method of Claim 17, wherein the step of generating the bias voltage further comprises charging and discharging a second capacitor in response to a second DC supply voltage and the RF input signal.

20. The method of Claim 17, wherein the bias voltage is greater than the first DC supply voltage.